

July 1995

INFORMATION
TECHNOLOGY
INVESTMENT

A Governmentwide
Overview





United States
General Accounting Office
Washington, D.C. 20548

Accounting and Information
Management Division

B-261553

July 31, 1995

The Honorable William V. Roth, Jr.
Chairman, Committee on Governmental Affairs
United States Senate

Dear Mr. Chairman:

The need to achieve high returns on information technology (IT) investments and reduce systems development risks has never been greater, given the public's demand for a government that works better and costs less. Increasingly, federal agencies' ability to improve their performance and reduce costs depends on automated data processing systems that give managers critical financial and programmatic information needed to make good decisions, hold down costs, and improve service to the public. As we have previously reported, major federal IT investments have often yielded poor results—costing more than anticipated, falling behind schedule, and failing to meet mission needs.¹

A major reason for these problems has been the lack of a sound process for selecting which IT initiatives to fund and for overseeing their development. Leading public and private sector organizations manage risks and maximize returns on IT-related spending by generally treating information systems projects as investments, rather than expenses.² With a disciplined process to control investments, agency executives can use explicit decision criteria and quantifiable measures for assessing mission benefits, risks, and costs to identify early—and avoid—investments in projects with low potential to yield significant improvements in performance. Such a process also establishes strong links between IT project outcomes and program needs.

The Congress is focusing increased attention on accountability for achieving results from IT projects, reflecting a growing consensus on the need for better investment decisions. Two legislative initiatives are particularly important. The recently reauthorized Paperwork Reduction Act requires federal agencies to establish a process to select, control, and evaluate IT initiatives and to integrate this process into budget, financial, and program management decisions. The Federal Acquisition Streamlining

¹Managing for Results: Steps for Strengthening Federal Management (GAO/T-GGD/AIMD-95-158, May 9, 1995).

²Executive Guide: Improving Mission Performance Through Strategic Information Management and Technology (GAO/AIMD-94-115, May 1994).

Act requires that executive agency heads (1) set cost, performance, and schedule goals for major acquisition programs, (2) monitor the programs to ensure they are achieving, on average, 90 percent of the established goals, and (3) take corrective actions, including termination, on programs that do not remain within the permitted tolerances.

A disciplined approach to information system investment, however, cannot work without a clear understanding of where the IT dollars are being spent, what costs and benefits are expected, and what risks must be managed. This letter responds to your March 21, 1995, request for information on overall federal IT obligations, as well as on programs by GAO, the Office of Management and Budget (OMB), and the General Services Administration (GSA) to identify IT investments that are at risk and in need of corrective action. To meet your request, we obtained the latest available IT-related budget information from OMB and met with officials of OMB's Office of Information and Regulatory Affairs to discuss the strengths and weaknesses of the IT budget figures that it obtains from federal agencies. We did not independently verify OMB's budget numbers or actual obligations. To gain further insight into federal IT obligations, we met with officials of the Electronic Industries Association (EIA), which forecasts federal IT spending based on information from OMB and independent data collection from other federal agencies.³ To obtain information on IT systems at risk, we discussed OMB's high-risk program with responsible officials, and met with GSA officials responsible for GSA's "Time Out" program. We are also providing information on the systems development projects listed in GAO's 1995 high-risk series reports.⁴ In addition, we describe a new IT risk-management proposal that has recently been put forward by OMB and GSA. Except as noted above, we performed our work between March 1995 and July 1995 in accordance with generally accepted government auditing standards.

Results in Brief

Although OMB does not collect comprehensive IT-related budget data on a governmentwide basis, it does collect data on a substantial portion of IT-related obligations in executive branch agencies through a special budget exhibit. Thus, the total amount of annual federal spending for IT is unknown; however, some significant costs are identified in available data. Generally speaking, agencies do not break out IT obligations as separate

³EIA develops electronics industry market data and technical standards. The association, which draws its members from companies in the U.S. electronics manufacturing community, also represents the interests of U.S. electronics concerns in the legislative arena.

⁴High-Risk Series: An Overview (GAO/HR-95-1, February 1995).

line items in their budget documents, but rather include this information within program or administrative costs. In the case of major modernization efforts that rely heavily on information systems, the IT obligations may be more visible, but even this can vary greatly from one agency to the next.

According to data gathered by OMB through its special budget exhibit, executive branch agencies planned to obligate about \$26.5 billion in IT-related funds in FY 1996. It is important to note that OMB's budget exhibit does not require the reporting of some potentially significant types of IT-related spending, such as funding for IT embedded in weapons systems. OMB has not determined what this unreported spending might amount to; however, the Department of Defense has estimated it spends \$24 billion to \$32 billion annually for software embedded in weapon systems.⁵

Over the past 6 years, the IT-related obligations reported to OMB have shown a nominal increase, from about \$22 billion in FY 1991 to the current estimate of about \$26.5 billion. This growth has been among the civilian agencies, with Department of Defense obligations declining modestly.

Currently, 11 federal agencies have problems with information management or systems development that are serious enough to be listed in the GAO, OMB, and/or GSA programs to identify high risk. The systems under development are key elements of mission-critical improvement initiatives involving such critical areas as air traffic control, veterans claims processing, and income tax processing. Costly in themselves, these new systems are intended to support program improvement initiatives that, altogether, involve multibillion dollar investments. All of the initiatives were placed in the high-risk programs because they warrant increased oversight by the Congress to ensure that top management in the agencies takes steps to resolve IT problems.

Annual IT-Related Budget Data

The Paperwork Reduction Act requires OMB to oversee the acquisition and use of automatic data processing equipment, telecommunications, and other information technology. Agency budget submissions generally do not break out IT-related spending into separate line items. Instead, IT-related funds are typically spread across the program area that the IT supports or included with administrative expenses. As a result, OMB established a separate reporting process for executive branch agencies to

⁵Embedded Computer Systems: Defense Does Not Know How Much It Spends on Software (GAO/IMTEC-92-62BR, July 6, 1992).

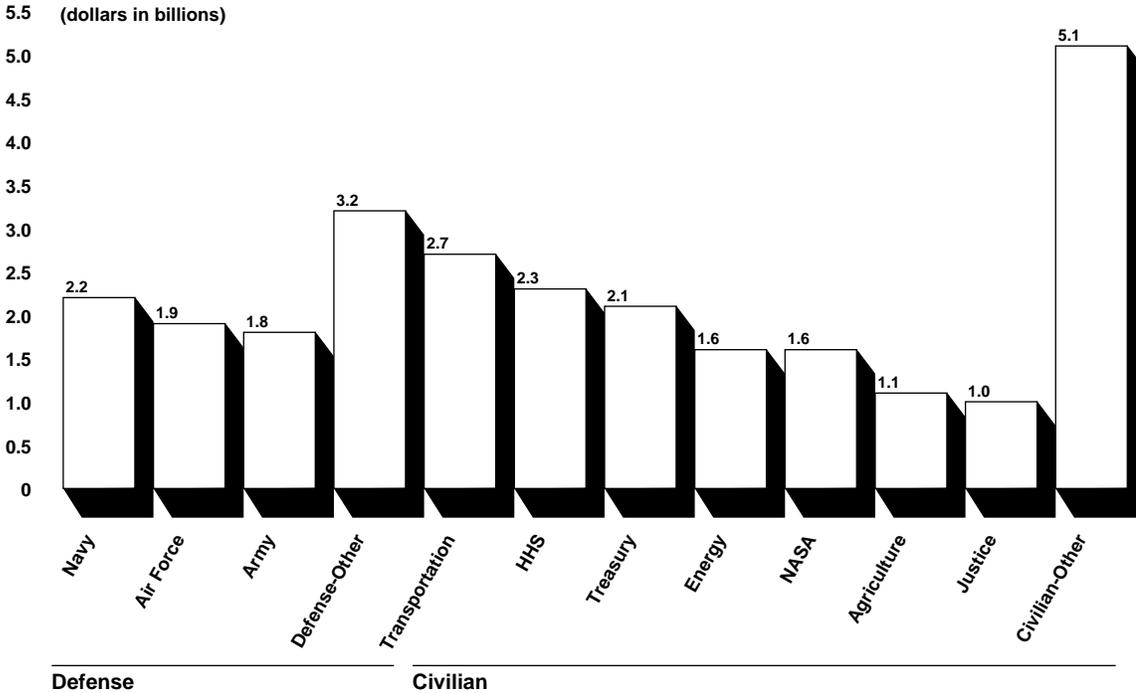
provide an IT-related budget exhibit. OMB collects these IT-related budget data each year after final budget decisions have been made. The procedures by which agencies are to report their IT obligation data to OMB are set forth in OMB Circular A-11, Section 43.

However, the IT obligation numbers that OMB reports based on agency data submissions do not represent total IT-related obligations. For example, agencies with annual IT-related obligations under \$2 million prior to FY 1996 and under \$50 million for FY 1996 and beyond, as well as the legislative and judicial branches of the federal government, are not required to separately report IT obligation data to OMB. In addition, computers that are embedded in weapon systems are not included in the reporting categories. Finally, federally funded research on computers is not part of the reporting requirement.

FY 1996 IT-Related Planned Obligations by Agency

OMB collects three kinds of numbers on IT-related obligations during each annual reporting cycle: (1) planned obligations for the upcoming budget year, (2) estimated obligations for the current fiscal year, and (3) actual obligations for the previous fiscal year. With regard to the first category—planned obligations for the upcoming budget year—for FY 1996, OMB reported that executive branch agencies planned to obligate about \$26.5 billion for IT-related items. Figure 1 provides an agency-by-agency breakout of this total.

Figure 1: Agencies' IT-Related Planned Obligations for FY 1996



Note: Individual agency amounts do not total \$26.5 billion due to rounding.

Source: Office of Management and Budget.

FY 1996 IT-Related Planned Obligations by Spending Category

Starting with the FY 1996 reporting cycle—which includes data on FY 1994 actual obligations, FY 1995 estimated obligations, and FY 1996 planned obligations—agencies that obligate more than \$50 million for IT activities are required to report obligations for the following categories:

- “Equipment” used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information. Equipment should be reported in the subcategories of “capital purchases” or “other equipment purchases/leases.”
- “Software,” including firmware, specifically designed to use and extend the capabilities of the equipment described above. Software should be reported in the subcategories of “capital purchases” for software

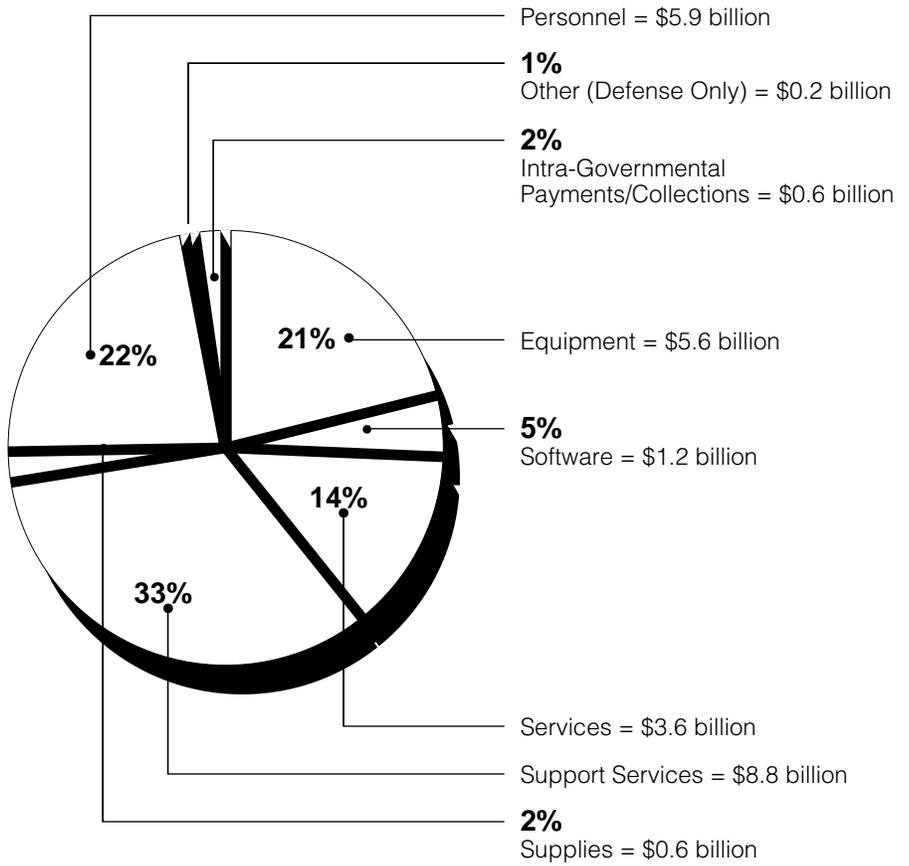
purchases or leases costing \$25,000 or more, or “other software purchases/leases” for purchases or leases costing less than \$25,000.

- “Services,” such as teleprocessing, local batch processing, electronic mail, voice mail, centrex, cellular telephone, facsimile, and packet switching of data.
- “Support services,” including maintenance used in support of the equipment, software, or services identified above. Support services also include data entry, training, planning, studies, facilities management, custom software development, system analysis and design, and computer performance evaluation and capacity management.
- “Supplies,” including any consumable item designed specifically for use with equipment, software, services, or support services described above.
- “Personnel,” including compensation and benefits for both civilian and military government personnel who perform IT functions 51 percent or more of their time.
- “Intra-governmental payments” for all IT services within agencies and between agencies and state and local governments.
- “Intra-governmental collections” for all IT services within agencies and between agencies and state and local governments.

The above reporting categories are different than those for previous reporting cycles because OMB no longer requires amounts for IT-related travel and some site/facilities-related obligations. Additionally, OMB regrouped several categories and raised the threshold that indicates whether an agency is required to report IT-related budget information from \$2 million in obligations for annual information system activities to \$50 million. Because of these changes in the reporting requirements, the IT-related budget that OMB puts forth for fiscal year 1996 will not be comparable to the fiscal year 1995 and earlier years’ IT-related budgets. Definitions of the old reporting categories are provided in appendix I.

Figure 2 shows a breakout of the \$26.5 billion in planned IT-related obligations for FY 1996 under the new reporting categories.

Figure 2: Categories of IT-Related Planned Obligations for FY 1996



Source: Office of Management and Budget.

Table 1 presents a dollar breakout of the categories for fiscal years 1994, 1995, and 1996.

Table 1: Categories of IT-Related Obligations

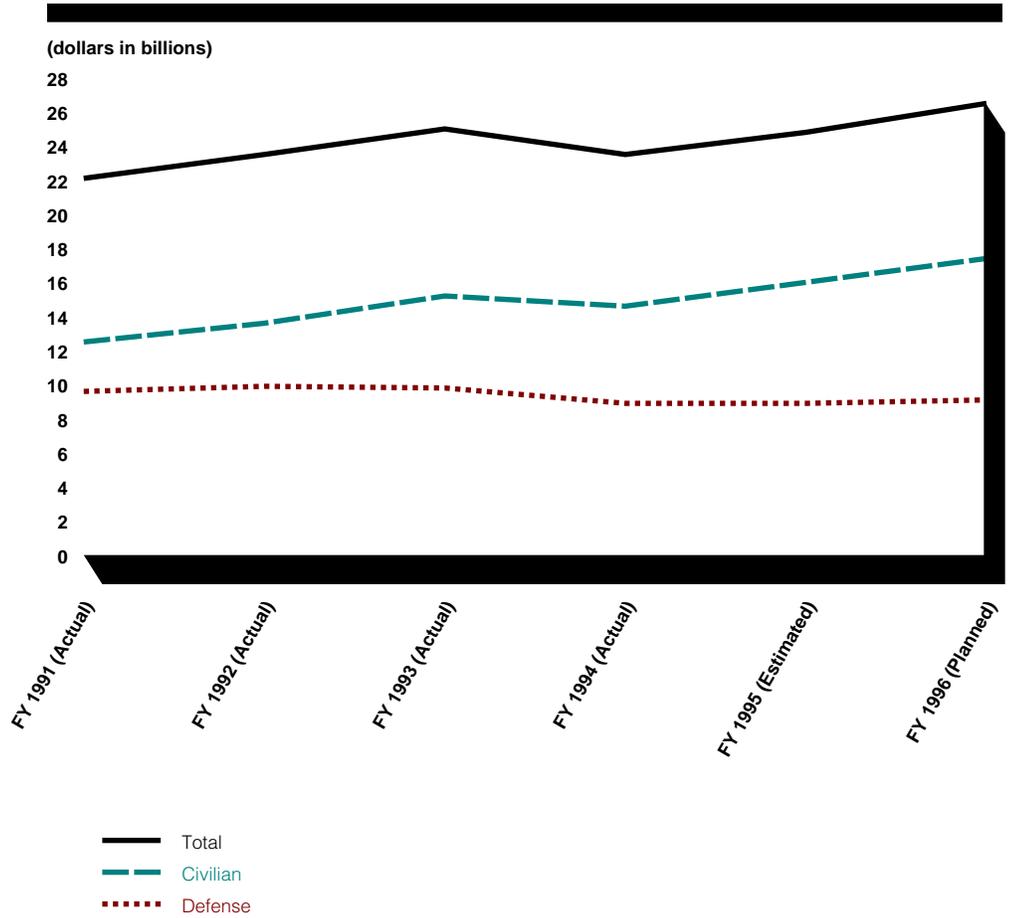
Dollars in thousands			
Category	Fiscal year 1994 (actual)	Fiscal year 1995 (estimated)	Fiscal year 1996 (planned)
Equipment:			
Capital purchases	\$3,774,079	\$3,788,099	\$4,765,481
Other equipment	1,082,442	899,530	836,632
Software:			
Capital purchases	879,413	810,650	968,194
Other software	260,284	242,582	260,652
Services	3,555,609	3,609,024	3,590,876
Support Services	7,766,616	8,545,627	8,761,938
Supplies	599,802	592,116	621,105
Personnel	5,360,095	5,828,311	5,902,884
Other (Defense only)	217,114	180,931	189,595
Intra-government payments	4,845,980	5,200,719	5,295,272
Intra-government collections	(4,884,703)	(4,870,382)	(4,703,030)
Total	\$23,456,731	\$24,827,207	\$26,489,599

Source: Office of Management and Budget.

6-Year Trend in IT Obligations

Based on A-11 budget exhibits, IT obligation levels over the past 6 years show a small, nominal increase. As shown in figure 3, this increase is a result of increased obligations in the civilian agencies. We did not calculate real growth because of the short time period for which actual obligation data are available.

Figure 3: IT-Related Obligations for Fiscal Years 1991-1996



Source: Office of Management and Budget.

To give a sense of the changes in IT-related obligations on an agency-by-agency basis over the last 6 years, table 2 gives a snapshot of actual obligations for FY 1991 and FY 1994, and planned obligations for FY 1996.

Table 2: Comparison of Agencies' IT-Related Obligations

Dollars in thousands			
Agency	Fiscal year 1991 (actual)	Fiscal year 1994 (actual)	Fiscal year 1996 (planned)
Air Force	\$2,740,445	\$1,715,367	\$1,912,591
Army	2,612,430	1,890,485	1,802,341
Navy	2,563,562	2,189,701	2,210,516
Defense-Other	1,650,071	3,068,141	3,155,043
Agriculture	640,920	934,200	1,130,657
Commerce	458,051	593,051	791,998
Education	100,110	205,002	385,979
Energy	1,666,621	1,422,196	1,564,050
HHS	1,315,855	1,909,109	2,268,510
HUD	131,849	138,535	152,430
Interior	449,225	517,428	533,895
Justice	663,627	953,264	971,832
Labor	143,944	142,198	189,180
State	344,791	315,230	340,307
Transportation	1,679,363	2,122,400	2,653,200
Treasury	1,330,186	1,588,313	2,119,695
VA	571,797	703,523	835,012
NASA	1,588,667	1,604,458	1,576,493
Others	1,420,193	1,444,130	1,895,870
Total	\$22,071,707	\$23,456,731	\$26,489,599

Source: Office of Management and Budget.

To provide a more detailed view of the A-11 data, we have summarized a subset of the available budget figures on IT-related obligations for FY 1991 through FY 1996 in appendix II.

Information Technology Problems Identified in Federal High-Risk Programs

Risk management is a vital part of sound systems development, especially given the difficulty and complexity of many of these efforts. Estimated development costs can skyrocket due to poorly defined or shifting requirements. Delays in developing and deploying a new system can erode projected benefits and delay returns on investment, and poorly designed systems can aggravate operational problems or create new ones. In the worst cases, systems development effort can suffer from a cascade of problems that lead to the termination of the effort, and a total waste of

expended funding. Large “grand design” systems are particularly vulnerable to such problems because of their “all or nothing” approach.

In addition to development problems with new systems, other kinds of problems with current systems can also put operations at risk. These include problems such as inadequacies in data that impair sound financial management and decision-making, or vulnerabilities in data security that put sensitive information at risk of tampering or improper disclosure. These development and operational problems are endemic in the federal government; indeed, our reviews have noted many such problems over the last decade.⁶

Three agencies with oversight responsibility—GAO, OMB, and GSA—have identified problems that selected major system development efforts or IT operations are having. The purpose in doing so is to get top management in the agencies to take steps to address the problems and implement effective remedial action. Currently, 11 agencies have projects or areas of IT management that have been designated as being at high risk, as shown in table 3. The sections following the table provide an overview of each of these high-risk programs.

⁶Government Reform: Using Reengineering and Technology to Improve Government Performance (GAO/T-OCG-95-2, Feb. 2, 1995); Improving Government: Actions Needed to Sustain and Enhance Management Reforms (GAO/T-OCG-94-1, Jan. 27, 1994); Information Resources: Summary of Federal Agencies' Information Resources Management Problems (GAO/IMTEC-92-13FS, Feb. 13, 1992).

Table 3: IT Areas and Systems at Risk

Agency/IT Project	GAO High-Risk Series	OMB High-Risk List	GSA Time Out Program ^a
Federal Aviation Administration: Air Traffic Control Modernization/Advanced Automation System	√	√	√
Internal Revenue Service: Tax Systems Modernization	√		
Department of Defense: Corporate Information Management Initiative	√		
National Weather Service Modernization	√	√	√
Department of Agriculture: Info Share Project	*	√	√
Department of Justice: Information Systems Security	*	√	
Department of State: IT Operations and Security	*	√	
GSA: Oversight of Major Systems Development Efforts Within GSA	*	√	
Securities and Exchange Commission: Management of Systems Development Projects	*	√	
Veterans Benefits Administration: Claims Modernization	*		√
Patent and Trademark Office Modernization	*		√

^aGSA has also conducted information resource management reviews that have touched on several of these agencies and projects.

*Note: Though not designated as high-risk, GAO has issued reports related to these areas. The reports are cited in the following section.

GAO's High-Risk Series

In 1990, GAO began a special effort to review and report on federal program areas that we consider to be high-risk because they are especially vulnerable to waste, fraud, abuse, and mismanagement, and were potentially costing the government billions of dollars without clear returns. This year, in recognition of the government's large investment in information technology, we introduced a newly designated high-risk area—information system modernizations.⁷

We have placed four multimillion dollar information technology initiatives on our list—air traffic control (ATC) modernization, tax systems modernization (TSM), Defense's corporate information management (CIM)

⁷High-Risk Series: An Overview (GAO/HR-95-1, February 1995).

initiative, and the National Weather Service's modernization. These four are listed because they have experienced past difficulties, involve complex technology, and are critical to improving their agency's mission performance.

Air Traffic Control Modernization

The ATC modernization is a \$37-billion program aimed at overhauling our nation's ATC system. Begun in 1981, this modernization has changed significantly over the years in both size and content due to changing requirements, new technologies, and project successes and failures. Currently, the modernization involves over 150 separate projects ranging from the remainder of the problem-plagued \$6 billion Advanced Automation System (AAS), to enroute and airport surveillance radars, to various communication systems. Each of these projects represents a story in and of itself, but perhaps none has received more attention and publicity than AAS, which the Federal Aviation Administration (FAA) totally restructured last year by canceling portions and redirecting residual pieces. AAS failed because FAA did not recognize the technical complexity of the effort, realistically estimate the resources required, adequately oversee its contractor's activities, or effectively control the system's requirements.⁸

Tax Systems Modernization

The Internal Revenue Service's (IRS) vision of future business operations includes virtually eliminating paper processing and relying instead on electronic systems. Through FY 1995, IRS will have spent or obligated over \$2.5 billion on its over \$8-billion TSM initiative. However, IRS does not yet have a comprehensive business strategy for maximizing cost-effective electronic returns submissions. In addition, although IRS has efforts underway to define and implement improvements to its strategic information management, technical infrastructure, and software development capability, these efforts are either incomplete or not yet institutionalized throughout the agency. We are concerned that IRS is continuing to develop systems with inadequate strategic management and system development processes.⁹

Defense's Corporate Information Management Initiative

Begun in 1989, the Department of Defense estimated that its Corporate Information Management (CIM) initiative would save billions of dollars by streamlining operations and enabling more effective resource management

⁸Advanced Automation System: Implications of Problems and Recent Changes (GAO/T-RCED-94-188, Apr. 13, 1994).

⁹Tax Systems Modernization: Management and Technical Weaknesses Must be Addressed if Modernization Is to Succeed (GAO/AIMD-94-156, July 26, 1995); Tax Systems Modernization: Status of Planning and Technical Foundation (GAO/T-AIMD/GGD-94-104, Mar. 2, 1994).

through better use of IT. However, to date, Defense has focused on selecting the best of its hundreds of automated systems and standardizing their use across military components rather than streamlining operations. Defense has identified several opportunities to streamline or reengineer the business processes supported by these systems—for example, personnel, payroll, inventory management, supply distribution, and contract administration—but few have been implemented. As a result, Defense continues to spend about \$3 billion annually to develop and modernize automated information systems with little demonstrable benefit. Few redundant systems have been eliminated and significant savings have not yet materialized.¹⁰

National Weather Service Modernization

The National Weather Service (NWS) estimates that its over \$4.5-billion program to modernize its weather observing, information processing, and communications systems will now be completed by 1999—5 years beyond its original 1995 completion date. Moreover, the Advanced Weather Interactive Processing System (AWIPS), which is to be the centerpiece of this modernization, has recently experienced design problems and is being restructured. Additionally, the multiple systems that comprise the modernization have long proceeded without the benefit of an overall architecture to guide their design, development, and evolution. This has negatively affected the modernization's cost and performance by requiring additional resources to acquire, interconnect, and maintain hardware and software.¹¹

Other Related Work

We have also reported on serious problems in each of the seven additional IT areas that were either designated high-risk by OMB or placed in Time Out by GSA. Although we have not designated these situations as high risk, we are monitoring them as appropriate. Following is a brief summary of our work related to each area.

- The Department of Agriculture managed Info Share primarily as a vehicle to acquire new IT rather than as an opportunity to fundamentally improve business processes.¹²

¹⁰Defense Management: Stronger Support Needed for Corporate Information Management Initiative to Succeed (GAO/AIMD/NSIAD-94-101, Apr. 12, 1994); Defense ADP: Corporate Information Management Must Overcome Major Problems (GAO/IMTEC-92-17, Sept. 14, 1992).

¹¹Weather Forecasting: Unmet Needs and Unknown Costs Warrant Reassessment of Observing System Plans (GAO/AIMD-95-81, Apr. 21, 1995); Weather Forecasting: Systems Architecture Needed for National Weather Service Modernization (GAO/AIMD-94-28, Mar. 11, 1994).

¹²USDA Restructuring: Refocus Info Share Program on Business Processes Rather Than Technology (GAO/AIMD-94-156, Aug. 5, 1994).

- The Department of Justice was not ensuring that its highly sensitive computer systems were adequately protected. In a specific situation, the Drug Enforcement Administration (DEA) had serious and fundamental computer security weaknesses that collectively posed a significant risk to the integrity of DEA's computer systems and the sensitive data they contain. During the course of our work, we noted improvements in computer security at Justice and DEA.¹³
- The Department of State had a poor history of managing information resources and, as a result, continues to rely on inadequate and obsolete IT. Such reliance has resulted in critical information shortfalls as well as interruption of operations.¹⁴
- GSA needed a chief information officer to (1) provide a better opportunity for ensuring top management involvement in linking information management and technology to meet internal customer needs and services and (2) provide a means to develop performance measures to more accurately evaluate the return on IT investments.¹⁵ GSA subsequently created a full-time chief information officer position.
- The Securities and Exchange Commission's efforts to manage development of a major system—the Electronic Data Gathering, Analysis, and Retrieval System—resulted in a 3-year schedule slippage and a nearly \$20 million increase in the contract's estimated cost.¹⁶
- The Veterans Benefits Administration (VBA) proceeded with plans to deploy computer equipment even though it had not determined how that equipment would improve the delivery of benefits to the veteran. Also, the costs for the entire modernization were indeterminate. Finally, we could not substantiate VBA's contention that new computer equipment was needed to immediately alleviate service problems caused by aging regional equipment.¹⁷
- The Patent and Trademark Office's (PTO) processes for exercising effective management control over development of the automated patent system were weak. PTO management, the Department of Commerce, and congressional oversight committees did not have meaningful information

¹³Justice Automation: Tighter Computer Security Needed (GAO/IMTEC-90-69, July 30, 1990); Computer Security: DEA Is Not Adequately Protecting Sensitive Drug Enforcement Data (GAO/IMTEC-92-83, Sept. 22, 1992).

¹⁴Department of State IRM: Strategic Approach Needed to Better Support Agency Mission and Business Needs (GAO/AIMD-95-20, Dec. 22, 1994).

¹⁵Information Management: Need for a Chief Information Officer for the General Services Administration (GAO/T-AIMD-94-98, Mar. 24, 1994).

¹⁶Securities and Exchange Commission: Effective Development of the EDGAR System Requires Top Management Attention (GAO/IMTEC-92-85, Sept. 30, 1992).

¹⁷Veterans Benefits: Redirected Modernization Shows Promise (GAO/AIMD-94-26, Dec. 9, 1993).

on progress against cost baselines, reasons for deviations from those baselines, or lessons learned to apply to the next development cycle.¹⁸

OMB's High-Risk Program

Following the disclosure of widespread and costly problems at the Department of Housing and Urban Development in 1989, OMB implemented its high-risk program to identify federal programs that are at risk of abuse, fraud, and waste, as well as to suggest needed corrective actions. Issues included on OMB's high-risk list are generally derived from Federal Managers' Financial Integrity Act reports sent by agency heads to the President, and from other sources, including reports by inspectors general and GAO. Upon designation of a high-risk issue, OMB works with the agency to ensure that appropriate attention is given to the area. A progress report providing OMB's assessment of agency efforts is published annually in the budget.

At the beginning of 1995, the OMB high-risk list contained a total of 57 areas. Although OMB does not categorize the areas on its high-risk list, we found seven items that are substantially IT related. The following is a brief synopsis of these seven IT-related areas.

- The Department of Agriculture's planning for its Info Share project is not effective. With estimated costs of \$260 million between 1995 and 1997 and \$1 billion over the project's life, Info Share will entail information integration, reengineering, and automatic data processing procurements to support departmentwide reorganization.
- The National Weather Service's \$4.5-billion modernization has more than doubled in cost and has experienced major schedule delays since its inception. AWIPS, which is necessary to realize the full benefits of the modernization, has been delayed due to the contractor's inability to deliver a government-approved system design.
- The Department of Justice's security over its data processing sites and systems is inadequate. While Justice has active efforts underway to improve security, sensitive litigation and law enforcement information remains at risk.
- The Department of State's operations are hampered by information management deficiencies. While State has made progress, the adequacy of its IT infrastructure to support mission-critical operations and ensure the security of sensitive information remains at risk.

¹⁸Patent and Trademark Office: Key Processes for Managing Automated Patent System Development Are Weak (GAO/AIMD-93-15, Sept. 30, 1993).

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- The Federal Aviation Administration's AAS, a \$6-billion program, has suffered from cost overruns, schedule delays, and the potential for conflict of interest in FAA's monitoring of the program.
 - GSA's oversight of its own major information systems has weaknesses that have resulted in risk of substantial investments in systems that may not perform as intended, although significant progress has been made in this area. GSA's budget for major systems development efforts is approximately \$99 million.
 - The Securities and Exchange Commission's management of computer systems development projects needs improvement. These projects totalled \$21.3 million in the FY 1995 budget. Assurance that this expenditure will result in systems that produce accurate, timely, and useful information remains at risk, although significant progress has been made.

GSA's Time Out Program

In mid-1994, GSA established its "Time Out" program to focus attention on some of the largest and most important federal IT acquisitions that have experienced problems. GSA has a special interest in this area because it is the federal government's central agency with responsibility for procuring IT. With the Time Out program, GSA established a means to cancel or restrict the procurement authority that had previously been delegated to an agency. A key feature of the Time Out program is GSA's requirement that the agency, for the project in question, either bring the project to a halt or cease new initiatives while an independent assessment, which entails total reconsideration of the project, is conducted. After the independent assessment is completed, the agency is expected to restructure the project to include goals and interim measures for tracking progress before delegated procurement authority is restored.

GSA uses four criteria to identify high-risk projects that should be considered candidates for Time Out:

- cost overruns, which signal poor contractor performance, poor management, or ineffective controls,
- schedule delays, which can indicate a lack of agency focus, management problems, or unresolved technology issues,
- failure to meet mission objectives, as evidenced by changes in program scope, milestones, or contractual requirements, which can indicate that a program is being modified to correct deficiencies, and
- management problems, as evidenced by high-level leadership changes or organizational restructuring, which can indicate that a program is encountering difficulties.

GSA has placed five projects in Time Out since the program was established—VBA’s claims modernization, FAA’s AAS, the National Weather Service’s AWIPS, Agriculture’s Info Share, and Patent and Trademark Office modernization.

VBA Modernization

In mid-May 1994, GSA modified the delegation of procurement authority for the VBA claims modernization. VBA’s intent for this project was to replace its aging computer systems with a new integrated, decentralized system to improve timeliness in processing claims for compensation and pension benefits. GSA became concerned about a schedule slippage in realizing performance improvements planned during the first stage of the modernization. This first stage involves a \$300-million contract for computer and communications equipment, packaged software, and related services.

FAA’s Advanced Automation System

In late-May 1994, GSA restricted the delegation of procurement authority for AAS until a restructuring plan could be approved by GSA. AAS has been the \$6-billion centerpiece of FAA’s plans to modernize the aging air traffic control system. GSA placed the system in Time Out because it was concerned about planned restructuring of the program to address serious cost overruns and schedule delays.

NWS’ Advanced Weather Interactive Processing System

In August 1994, GSA placed AWIPS in Time Out by directing that the AWIPS-90 contract not be modified to restructure the project without GSA approval. AWIPS, which is expected to cost \$525 million, is the principle integrating system for NWS’ \$4.5-billion modernization effort. GSA was concerned about significant software development, integration, contractual, and program management difficulties with AWIPS.

Agriculture’s Info Share

In September 1994, GSA cancelled the delegation of procurement authority it had previously issued to the Department of Agriculture for its \$2.6-billion Info Share initiative, which was designed to improve operations and provide better service to farmers. In taking this action, GSA expressed concern about the lack of a firm definition for the Info Share initiative. Also, GSA took the position that IT acquisitions planned under Info Share might not support Agriculture’s strategic plans.

PTO Modernization

In January 1995, GSA placed PTO’s \$955-million modernization in Time Out by restricting the delegation of procurement authority for the Automated Patent System pending an independent assessment of the program. In placing PTO’s modernization in Time Out, GSA noted that the modernization

will take twice as long and cost three times as much as originally planned. Additionally, GSA noted that the modernization has undergone restructuring and that the current modernization strategy is unclear.

OMB/GSA Proposal for Improving Oversight of Information Technology Investments

These various high-risk programs, for the most part, identify problems that are already serious by the time the systems are put on these lists. More emphasis needs to be placed on improving the entire IT planning and acquisition process in order to ensure that the most appropriate IT projects receive funding and that they are well managed and kept on track.

At the request of the Vice President, OMB and GSA chaired an interagency working group to review the current process for planning and acquiring technology and to recommend improvements. In its May 19, 1995, report to members of the President's Management Council and senior federal information resource management officials, the working group presented three key findings:

- The most important points in the life cycle of an IT investment occur well before the present oversight process begins. The oversight process should be focused on promoting sound capital planning, which begins with an analysis of how IT investments will be used to improve an agency's business processes.
- To help manage their IT investments, agencies need to draw upon the government's best experience and talent across agency lines. This will assist the agencies in managing their complex systems projects and pursuing development efforts on functions that could yield cross-agency or governmentwide benefits.
- Agencies need to rely more on the use of incremental and evolutionary approaches to major systems development and acquisition, rather than undertaking large, unwieldy projects.

As the working group noted, similar conclusions were reached in studies prepared by the Senate Subcommittee on Oversight of Government Management and the District of Columbia, chaired by Senator Cohen, and in GAO's work on the information management practices of leading public and private sector organizations.

The working group also offered a number of recommendations to address these findings, including the following:

- Revise OMB Circular A-11 to emphasize the importance of basing IT investment decisions on an analysis of business needs; comparative measures of cost, benefits, and risks among IT projects; and performance measurement.
- Establish two separate interagency groups to (1) advise OMB and GSA on the initial approval and subsequent management of large, complex, or risky IT investments and (2) identify opportunities, suggest technical and organizational approaches, and set priorities for cross-agency or governmentwide use. In reviewing funding requests, OMB would not recommend funding for IT investment proposals that were inconsistent with the advice of the groups, unless the requesting agency made a reasonable counter-argument.
- Draft legislation and revise OMB Circular A-109, “Major System Acquisitions,” to promote and support modular acquisitions; maximize reliance on purchasing commercial off-the-shelf technologies; and ensure that acquisition programs set realistic cost, schedule, and performance goals.
- Continue GSA’s Time Out program to revoke or condition delegation of procurement for system development projects experiencing serious trouble that are not being effectively managed by the agency.

OMB and GSA are currently responding to agencies’ comments on the working group’s findings and recommendations as a step toward implementing the group’s proposal.

The Need for Future Action

Recognizing the far-reaching importance of this issue, we have made IT investment a major issue in our ongoing work. We are working closely with OMB to prepare a guide for agencies to use in evaluating IT investments. And we are currently developing a framework for making IT investment decisions. This framework can be used by agencies to guide their decision-making process and to help implement a disciplined approach for maximizing mission benefits and managing risks.

Given the importance of this issue to overall government reform, it is important that the Congress maintain its scrutiny over IT spending and continue to identify areas where unsound investments are being made. This needs to be done, not only from a governmentwide perspective, but also on an agency-by-agency level, where the spending decisions are being made. Agencies must be encouraged to establish an outcome-oriented,

integrated strategic information management process that is focused on improving service delivery and product responsiveness, and on costs and quality—based on customer needs. Mission planning, program budgeting, and IT investment decisions should be clearly linked to the achievement of these performance goals. Accordingly, the congressional committees for oversight, budget, and appropriations all need to be active in ensuring that agencies can justify IT investments, based on each project's costs, risks, and benefits for meeting critical mission needs.

We look forward to providing additional assistance to the Committee in this important area. If you have questions about the information in this letter, please contact me at (202) 512-6406. Major contributors to this report are listed in appendix III.

Sincerely yours,

A handwritten signature in black ink that reads "Chris Hoenig". The signature is written in a cursive, slightly slanted style.

Christopher W. Hoenig
Director, Information Resources Management/
Policies and Issues

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Abbreviations

AAS	Advanced Automation System
ADP	automated data processing
ATC	air traffic control
AWIPS	Advanced Weather Interactive Processing System
CIM	corporate information management
DEA	Drug Enforcement Administration
EIA	Electronic Industries Association
FAA	Federal Aviation Administration
FY	fiscal year
GAO	General Accounting Office
GSA	General Services Administration
HHS	Health and Human Services
HUD	Housing and Urban Development
IRS	Internal Revenue Service
IT	information technology
NWS	National Weather Service
OMB	Office of Management and Budget
PTO	Patent and Trademark Office
SEC	Securities and Exchange Commission
TSM	tax systems modernization
VBA	Veterans Benefits Administration

OMB's Old A-11, Section 43 Reporting Requirements

For reporting prior to FY 1996, circular A-11 required agencies to report IT-related obligations under five major categories:

- Capital Investment: obligations incurred for real and personal property, including the purchase of computer hardware and software, telephones, and site construction and modifications to support computer facilities.
- Personnel: work-years and related obligations for civilian and military compensation, benefits, and travel for personnel whose principal duties are directly related to information technology systems.
- Equipment rental, space, and other operating costs: obligations for those costs incurred for government-owned, government-operated facilities, including the lease of hardware and software.
- Commercial services: obligations for network services or facilities where payments are made directly to private industry, including certain types of contracts for computer system time; voice and data communications; operations and maintenance services; systems analysis, programming, design, and engineering services; management studies; and other contractual obligations that make significant use of data-processing equipment.
- Transfer Payments: obligations for payments and offsetting collections for information technology services (1) between executive branch agencies, (2) within individual agencies, and (3) provided to or received from the judicial and legislative branches, the Postal Service, state and local governments, and several other entities.

Table I.1 presents a dollar breakout of the five major categories by subcategories.

Appendix I
OMB's Old A-11, Section 43 Reporting
Requirements

Table I.1: IT-Related Obligations
According to Old Categories

Dollars in thousands			
Category	Fiscal year 1991 (actual)	Fiscal year 1993 (actual)	Fiscal year 1995 (planned)
<u>Capital Investment</u>			
Equipment	\$3,914,902	\$4,602,569	\$4,906,738
Software, other equipment	644,447	720,970	789,758
Site or facility	338,659	442,262	388,166
<u>Personnel</u>			
Compensation, benefits, travel	5,159,845	5,640,706	5,892,135
<u>Equipment, Rental, Space, Other</u>			
Equipment lease	376,252	283,705	264,291
Software lease	124,056	127,344	130,384
Space	190,864	266,161	332,200
Supplies, other	869,929	865,830	909,669
<u>Commercial Services</u>			
ADP equipment time	178,767	176,178	161,984
Voice communication	2,317,726	2,190,784	2,233,561
Data communication	975,198	1,412,673	1,477,690
Operations, maintenance	3,745,147	3,963,971	4,383,480
System design, analysis	2,556,338	2,911,975	3,445,545
Studies, other	504,158	765,241	895,082
Significant use of IT	383,972	511,248	541,871
<u>Transfer Payments</u>			
Inter-agency services	-214,837	-677,357	-720,271
Intra-agency services	36,091	-187,280	-80,133
Other services	-29,807	957,400	1,354,527
Total	\$22,071,707	\$24,974,380	\$27,306,677

Source: Office of Management and Budget.

IT-Related Obligations for FY 1991 Through FY 1996

Dollars in thousands

Agency	Fiscal year 1991	Fiscal year 1992	Fiscal year 1993	Fiscal year 1994	Fiscal year 1995	Fiscal year 1996
Air Force						
Planned ^a	\$2,658,679	\$2,374,296	\$2,410,126	\$2,091,316	\$1,792,235	\$1,912,591
Estimated ^b	2,231,397	2,391,751	2,287,567	1,957,019	1,808,441	
Actual ^c	2,740,445	2,479,963	2,341,445	1,715,367		
Army						
Planned	2,951,049	2,821,008	2,561,964	2,261,849	2,147,499	1,802,341
Estimated	2,569,493	2,703,519	2,306,318	2,153,579	1,807,988	
Actual	2,612,430	2,586,209	2,322,378	1,890,485		
Navy						
Planned	2,433,291	2,614,436	2,584,182	2,421,836	2,305,940	2,210,516
Estimated	2,584,287	2,502,527	2,492,873	2,232,384	2,195,823	
Actual	2,563,562	2,574,335	2,383,948	2,189,701		
Defense-Other						
Planned	1,481,431	1,733,138	1,993,029	2,716,038	3,536,576	3,155,043
Estimated	1,357,413	1,874,447	2,797,405	3,175,537	3,040,959	
Actual	1,650,071	2,246,943	2,709,481	3,068,141		
Agriculture						
Planned	817,417	873,955	773,946	827,350	1,173,974	1,130,657
Estimated	822,885	825,336	757,523	1,085,694	988,272	
Actual	640,920	696,521	904,243	934,200		
Commerce						
Planned	453,056	570,162	513,846	620,952	717,544	791,998
Estimated	474,992	521,054	541,764	629,907	690,892	
Actual	458,051	535,174	569,887	593,051		
Education						
Planned	103,595	98,859	120,990	247,594	311,040	385,979
Estimated	91,981	95,460	128,749	216,121	285,425	
Actual	100,110	106,118	137,639	205,002		
Energy						
Planned	1,407,486	1,688,299	1,858,846	1,792,404	1,987,790	1,564,050
Estimated	1,561,106	1,768,392	1,737,434	1,881,580	1,497,850	
Actual	1,666,621	1,697,403	1,881,404	1,422,196		
HHS						
Planned	857,817	1,390,761	1,493,694	1,787,843	2,910,042	2,268,510 ^d
Estimated	1,278,590	1,420,620	1,521,410	2,825,347	3,012,366	
Actual	1,315,855	1,417,405	2,366,989	2,404,481		

(continued)

**Appendix II
IT-Related Obligations for FY 1991 Through
FY 1996**

Dollars in thousands

Agency	Fiscal year 1991	Fiscal year 1992	Fiscal year 1993	Fiscal year 1994	Fiscal year 1995	Fiscal year 1996
HUD						
Planned	119,654	165,758	149,252	152,907	157,450	152,430
Estimated	131,575	140,508	121,329	139,245	175,851	
Actual	131,849	143,122	128,192	138,535		
Interior						
Planned	441,054	498,383	517,588	521,865	540,162	533,895
Estimated	454,699	497,795	471,643	534,471	534,836	
Actual	449,225	455,144	490,041	517,428		
Justice						
Planned	621,946	802,258	903,892	897,586	957,727	971,832
Estimated	619,838	866,680	788,233	884,856	922,608	
Actual	663,627	677,602	832,735	953,264		
Labor						
Planned	145,865	157,591	153,189	170,130	182,983	189,180
Estimated	142,949	156,386	165,966	156,261	164,112	
Actual	143,944	170,130	169,917	142,198		
State						
Planned	386,099	358,219	351,831	337,635	382,871	340,307
Estimated	335,046	345,211	329,719	346,231	316,834	
Actual	344,791	318,774	347,369	315,230		
Transportation						
Planned	429,790	2,057,854	3,045,650	2,482,504	2,179,851	2,653,200
Estimated	1,806,122	1,856,569	2,296,129	1,957,579	2,331,600	
Actual	1,679,363	2,187,464	1,750,399	2,122,400		
Treasury						
Planned	1,340,522	1,653,551	2,051,344	1,772,869	2,132,296	2,119,695
Estimated	1,321,616	1,742,273	1,777,469	1,800,648	1,621,846	
Actual	1,330,186	1,473,549	1,722,587	1,588,313		
VA						
Planned	516,189	608,531	604,927	613,278	684,229	835,012
Estimated	574,290	635,198	675,827	661,286	739,784	
Actual	571,797	603,655	642,019	703,523		
NASA						
Planned	1,803,739	1,966,729	1,917,746	2,127,654	1,752,469	1,576,493
Estimated	1,722,373	1,781,677	2,066,247	1,763,821	1,525,870	
Actual	1,588,667	1,776,679	2,002,034	1,604,458		

(continued)

**Appendix II
IT-Related Obligations for FY 1991 Through
FY 1996**

Dollars in thousands

Agency	Fiscal year 1991	Fiscal year 1992	Fiscal year 1993	Fiscal year 1994	Fiscal year 1995	Fiscal year 1996
Others						
Planned	1,575,782	1,517,627	1,403,746	1,398,158	1,453,999	1,895,870
Estimated	1,404,395	1,628,826	1,356,760	1,398,890	1,165,850	
Actual	1,420,193	1,384,179	1,271,673	948,758		
Total						
Planned	\$20,544,461	\$23,951,415	\$25,409,788	\$25,241,768	\$27,306,677	\$26,489,599
Estimated	\$21,485,047	\$23,754,229	\$24,620,365	\$25,800,456	\$24,827,207	
Actual	\$22,071,707	\$23,530,369	\$24,974,380	\$23,456,731		

^aPlanned refers to the estimated obligations contained in the budget request for the fiscal year.

^bEstimated refers to obligations estimated for the fiscal year underway that are contained in the budget request for the upcoming fiscal year.

^cActual refers to actual obligations incurred.

^dThe fiscal year 1996 planned obligations for HHS do not include \$765,490,000 in planned obligations by the Social Security Administration, which became an independent agency effective March 31, 1995.

Source: Office of Management and Budget.

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